An Extract

Of a Letter written Decemb. 28. *1666. by M.* Auzout *to the Publiſher, concerning a way of his, for taking the* Diameters *of the* Planets, *and for knowing the* Parallax *of the* Moon; *as alſo the Reaſon, why in the* Solar Eclipſe *above calculated, the* Diameter *of the* Moon *did increaſe about the end.*

I did apply my ſelf the laſt Summer to the taking of the *Diameters* of the Sun, Moon, and the other Planets, by a Method, which one M. *Picard* and my ſelf have, eſteem'd by Us the beſt of all thoſe, that have been practis'd hitherto; ſince we can take the *Diameters* to *Second Minutes*, being able to divide one foot into 24000. or 30000. parts, ſcarce failing as much as in one only part, ſo as we can in a manner be *aſſur'd*, not to deceive our ſelves in 3. or 4. *ſeconds*. I ſhall not now tell you my Obſervations, but I may very well aſſure you, that the *Diameter* of the *Sun* has not been much leſs in his *Apogee*, than 31. m. 37. or 40. ſec. and certainly not leſſe than 31. m. 35. ſec. and that at preſent in his *Perigee* it paſſes not 32. m. 45. ſec. and may be leſſe by a ſecond or two. That, which is at the preſent troubleſome, is, that the *Vertical* Diameter, which is the moſt eaſie to take, is diminiſht, even at *Noon*, by 8. or 9. ſec. becauſe of the *Refractions*, which are much greater in Winter than Summer at the ſame height; and that the *Horizontal* Diameter is difficult, becauſe of the ſwift motion of the Heavens.

As for the *Moon*, I never yet found her Diameter leſs than 29. m. 44. or 45. ſec. and I have not ſeen it paſs 33. m. or if it hath, it was only by a few *ſeconds*. But I have not yet taken her in all the kinds of ſituations of the *Apogees* and *Perigees* which happen, with the *Conjunctions* and *Quadratures*. I do not mention all, what can be deduced from thence, but if you have Perſons at *London*, that obſerve theſe *Diameters*, we may entertain our ſelves more about this Subject, another time. I ſhall only tell you, that I have found a Way to know the *Parallax* of the *Moon*, by the means of her *Diameter*: *Vid.* If on a day, when ſhe is to be in her *Apogee* or *Perigee*, and in the moſt *Boreal* Signes, you take her Diameter towards the *Horizon*, and then towards the *South*, with her *Altitudes* above

above the Horizon. For, if the Obſervation of the Diameters be exact; as in theſe Situations the Moon changes not conſiderably her Diſtance from the Earth in 6. or 7. hours, the *Difference* of the Diameters will ſhew the Proportion there is of her Diſtance, with the Semi-diameter of the Earth. I do not enlarge, becauſe that as ſoon as one hath this *Idea*, the reſt is eaſie. The ſame would yet be practis'd better in the places, where the Moon paſſes through the *Zenith*, than here; for the greater the difference is of the Heights, the greater is that of the Diameters. I do not note (for it eaſily appears) that, if one were under the ſame *Meridian*, or the ſame *Azimuth* in two very diſtant places, and took at the ſame time the Diameter of the Moon, one would do the ſame thing; though this Method goes not to preciſeneſs.

From what has been ſaid, may be collected the reaſon of the Obſervation, which M. *Hevelius* made in the laſt *Eclipſe of the Sun*, touching the increaſe of the Moon's Diameter about the end. I am exceeeding glad, that a perſon, who probably knew not the cauſe of it, has made the Experiment: but it is ſtrange, that until now no Aſtronomer has foreſeen, that that ſhould happen, nor given any precepts for the Change of the *Moons Diameter* in the *Eclipſes of the Sun*, according to the places, where they ſhould happen, and according to the Hour and Height, the Moon ſhould have. For, what hapned in that *Eclipſe* of Augmentation, would have faln o ut contrarily, if it had been in the Evening; for, the Moon, which in that *Eclipſe*, that began in the Morning, was higher about the end than at the beginning, was nearer us, and conſequently was to appear bigger: But if the *Eclipſe* ſhould happen in the Evening, ſhe would be lower at the end, and therefore more diſtant from us, and conſequently appear leſſer. So alſo in two different places, whereof one ſhould have the Eclipſe in the Morning, and the other at Noon, the Moon ſhould appear bigger to him that hath it at Noon: And ſhe muſt likewiſe appear bigger to thoſe, who ſhall have a leſſer *Elevation* of the *Pole* under the ſame *Meridian*, becauſe the Moon will be nearer them.

I wiſh, I could ſatisfie you about the *Optick Glaſſes* of Signior *Burattini* in *Poland*, which he hath ſent hither; but I have not yet ſeen their performances my ſelf. I only ſaw once the Glaſſes, which

which are perfectly well wrought and well poliſht. Thoſe, that have tried them, find them very good, but they are only, the one of 10, the other of 8. foot. A good Aſtronomer told me, that they would bear a great *Aperture* in reſpect of their length.

I do not well know, what to ſay to yours concerning M. *Hevelius*. Mean while, the intereſt of truth, and the obliging manner, he has treated me with, engage me to anſwer him, in the matter of the *Comets*: I am perſwaded, I ſhall convince him; but ſince he hath taken the *Illuſtrious Royal Society* for Judge, I accept that with all my heart.

A Relation
Of the loſs of the Way to prepare the Bononian Stone *for ſhining.*

Though ſeveral Perſons have pretended to know the Art of preparing and calcining the *Bononian* Stone, for keeping a while the Light once imbibed; yet there hath been indeed but one, who had the true ſecret of performing it. This was an *Eccleſiaſtick*, who is now dead, without having left that skill of his to any one, as Letters from *Italy* and *France*, ſome while ſince, did inform. There is no ſubſtance, in Nature, known to us, that hath the effect of this Stone; ſo that (to the ſhame of the preſent Age) this *Phænomenon* is not like to be found any where, but in Books, except ſome happy *Genius* light upon the ſame or the like skill *.

[* It is hoped notwithſtanding (which alſo a late Letter from abroad does hint) that ſome or other of the *Italian* Vertuoſi at *Florence* have ſecured this Secret.]

A Deſcription
Of a Swediſh *Stone, which affords* Sulphur, Vitriol, Allum, *and* Minium.

This was communicated to the *R. Society* by Sir *Gilbert Talbot* Knight, a Worthy Member of that Body, as he had received it in *Denmark*, being his Majeſties Extraordinary Envoy there; as follows,

THere is a Stone in *Sweden* of a Yellow Colour, intermixed with ſtreaks of white (as if compoſed of Gold and Silver) and heavy withal. It is found in firm Rocks, and runs in Veins, upon